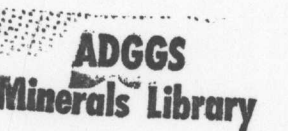
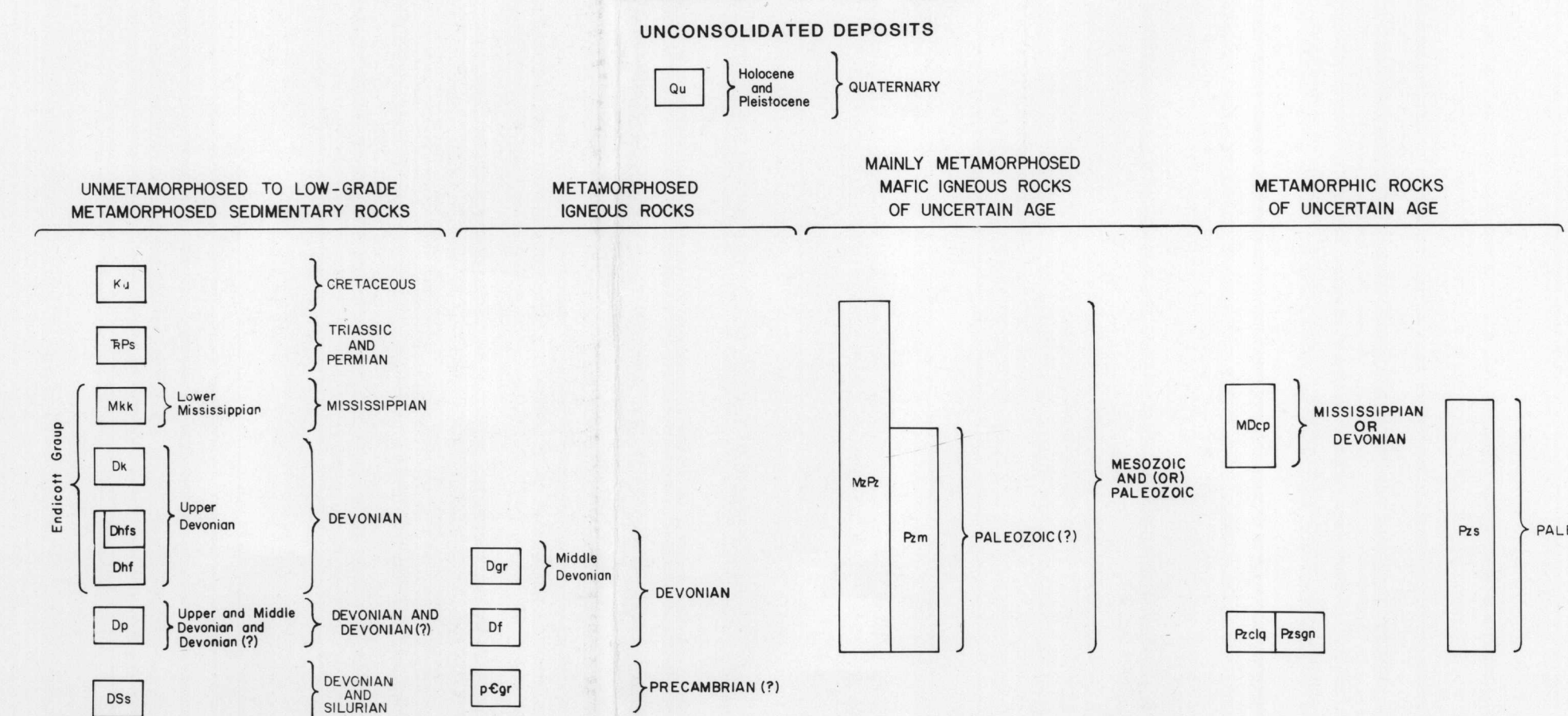




- Lineament
- Lineaments comprising a lineament "zone" --- Herein, the term lineament "zone" is defined as "a group of aligned or near-aligned, well-defined lineaments, that includes nearby parallel lineaments"
- "Target" areas marked by noteworthy geochemical anomalies and mineral occurrences (see DISCUSSION)



CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

- | Unconsolidated Deposits | | Metamorphic Rocks of Uncertain Age | |
|-------------------------|--|------------------------------------|---|
| Qc | SURFICIAL DEPOSITS, UNDIVIDED | Hdp | CALCAREOUS PHYLLITE--black calcareous phyllite with thin dark-gray limestone lenses |
| | Unmetamorphosed to Low-Grade Metamorphosed Sedimentary Rocks | Pss | LOW-GRADE SCHIST--Chloritoid-bearing quartz-muscovite schist, calcareous quartz-abbite-muscovite schist, quartzite, and rare thin chloritic beds. Schist locally contains glauophane |
| Ku | UNDIVIDED CONGLOMERATE--Quartz-pebble and igneous pebble conglomerate; some interbedded volcanic sandstone | Nwcl | CLASTIC QUARTZITE--Chlorite quartzite and chloritic quartzite |
| Wps | SHUMLIE AND SIKSIEFER FORMATIONS (Triassic and Lower Devonian) Formations--Limestone Formation (Triassic) and black slate and chert (Lower Devonian) Formations | Resgn | LOW- to MEDIUM-GRADE SCHIST AND GNEISS--Inter-layered quartz-muscovite schist and quartzite, weathering marble. Medium-grade schist and paragneiss with garnet, biotite, and amphibole near upper part. |
| | END-COAST GROUP (Mississippian and Devonian)--In map area includes: | | |
| Msk | RAYAN SHALE AND KERRICK CONGLOMERATE (Lower Mississippian)--m map unit includes related undifferentiated clastic rocks and a few outcrops of limestone in lower 1' part of Ladbroke Group | | Contact--Dashed where approximately located; dotted where concealed |
| Lk | KANAUAT CONGLOMERATE (Upper Devonian)--Non-marine rust-colored quartz sandstone, ferruginous mudstone, and black siltstone, and shale. Prominent resistant layers of black-lichen-colored light-gray quartzite. Rare conglomerate | | Fault--Dashed where approximately located or inferred; dotted where concealed; queried where uncertain |
| Dhf | HUNT FORK SHALE (Upper Devonian)--Dark-gray phyllite with minor quartz mudstone and sandstone. Upper part includes black shale and thin layers of interbedded rusty-weathering field-spathic mudstone and dark gray shale. Locally includes thin layers of quartzite | | Thrust Fault--Dashed where approximately located or inferred; dotted where concealed; queried where uncertain. Searseath |

DISCUSSION

Landsat images of the Survey Pass quadrangle were analyzed for lineaments, lineament "zones," circular and arcuate features, and iron-oxide-colored areas that might be related to known mineral occurrences or to areas of mineral resource potential. The methodology and limitations of this type of study are discussed in detail by Albert (1975) and Albert and Steele (1976a, b). Details concerning the different types of imagery used are given in the "Table of Imagery Used in Analyses" (see this sheet).

Although the Landsat-derived data have not been exhaustively studied in relation to geologic, mineralogic, and geophysical data, certain correlations between Landsat features and both specific localities and broad areas with mineralization or mineralization potential are nonetheless apparent from this study.

At numerous places within the Survey Pass quadrangle and parts of adjacent quadrangles, lineament zone intersections, formed by north- and east-trending lineament zones, coincide with prominent circular features that overlie exposed granitic masses (see Figs. 3 and 4). These three sets of spatial coincidence may indicate a correlation between the two sets of Landsat features [lineament zone intersections and circular features] and the location of granitic intrusive bodies which are potential agents of disseminated, contact-metamorphic mineralization within this area (Grybeck and Nelson, 1980).

The present study targets numerous other localities (Lineament Map, sheet 1) within the quadrangle where lineament zone intersections and prominent circular features occur, and which are thought to be large volcanic rocks. These localities may be sites of potentially mineralizing, granitic intrusive masses at depth. Mineralogical and geochemical data from other studies (Donald Grybek, oral commun., 1980) independently point to this same conclusion for at least three of these "target" areas (Circular and Arcuate Features Map, sheet 2): features A, B, and C in the northern part of the quadrangle; these three localities are marked by numerous yellow mineral deposits (principally Cu, Pb, Zn, Ag) (Grybek and Nelson, 1980) and (or) anomalous geochemical values (principally La, Th, Be, Sn, J) (B. Catherall, unpub. data, 1980).

Iron-oxide-colored areas shown herein (Circular and Arcuate Features Map, sheet 2) appear much like those found in other Alaskan areas (Albert, 1975; Albert and Steele, 1976a; Steele and Le Compte, 1978), many of which have proved to be sites of hydrothermal alteration and mineralization. Such areas noted in the Survey Pass quadrangle may be of similar origin and may thus warrant field investigation.

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- Steele, W.C., and Albert, N.R.D., 1978, Interpretation of Landsat imagery of the Talkeetna quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map MF-870C, 2 sheets, scale 1:250,000.
- Steele, W.C., and Le Compte, J.R., 1978, Map showing interpretation of Landsat imagery of the Aleutina North Range, Alaska: U.S. Geological Survey Open-File Report 78-58B, 2 sheets, scale 1:250,000.

TABLE OF IMAGERY USED IN ANALYSES

Scenes used for computer enhancement are 1758-21195 and 1758-21201, both taken 8/20/74. Computer compatible tapes were processed by Pat S. Chavez, Jr., Teresa E. Grow, and Lynda Sowers, U.S. Geological Survey, Flagstaff, Arizona. Imagery is available from EROS Data Center, Sioux Falls, South Dakota 57198 (specify PAD number when ordering). More detailed descriptions of the various computer enhancement techniques used in these images are given in Albert and Steele (1976a, b) and Condit and Chavez (1978). Example of imagery is shown in figure 2.

Image Type	Computer-Enhanced	Bands and Colors Used	Projection	PAD Number	Transparency Scale	Print Scale
False-color with linear stretch	Yes	4 Blue 5 Green 7 Red	Orthographic	E-812-67CT	1:1,065,000	1:250,000
False-color with sinusoidal stretch	Yes	4 Green 6 Red 7 Blue	Orthographic	E-813-67CT	1:1,065,000	1:250,000
Simulated natural color	Yes	4 Green 5 Red Syn Blue	Orthographic	E-814-67CT	1:1,065,000	1:250,000
Horizontal first derivative	Yes	6 BW	Orthographic	E-211-45BP	1:1,582,500	1:250,000
Vertical first derivative	Yes	6 BW	Orthographic	E-212-45BP	1:1,582,500	1:250,000
Diagonal first	Yes	6 BW	Orthographic	E-213-45BP	1:1,567,500	1:250,000

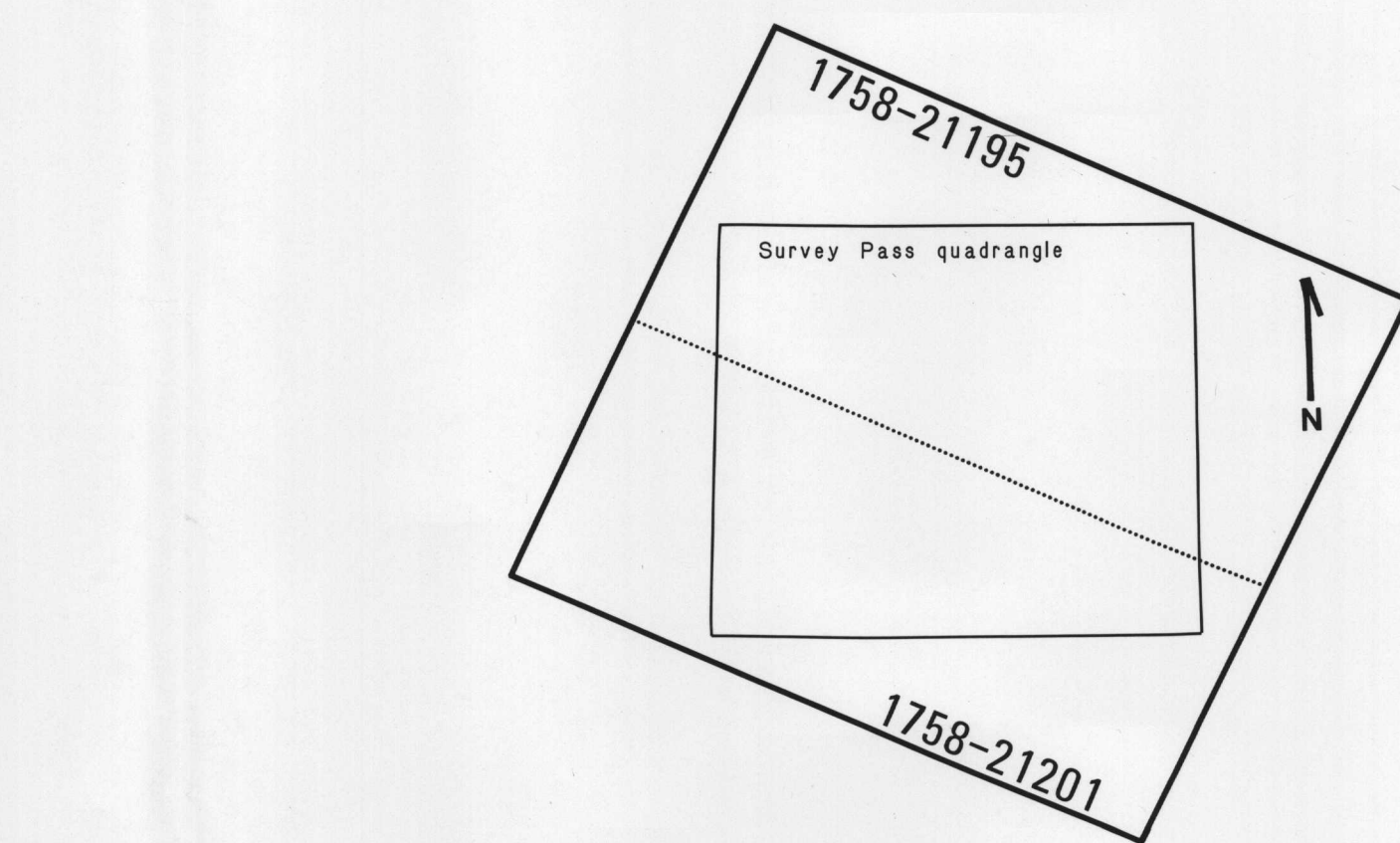


Figure 1. Map showing location of Landsat imagery used in analyses of the Survey Pass quadrangle. Dotted line indicates boundary between mosaicked images.

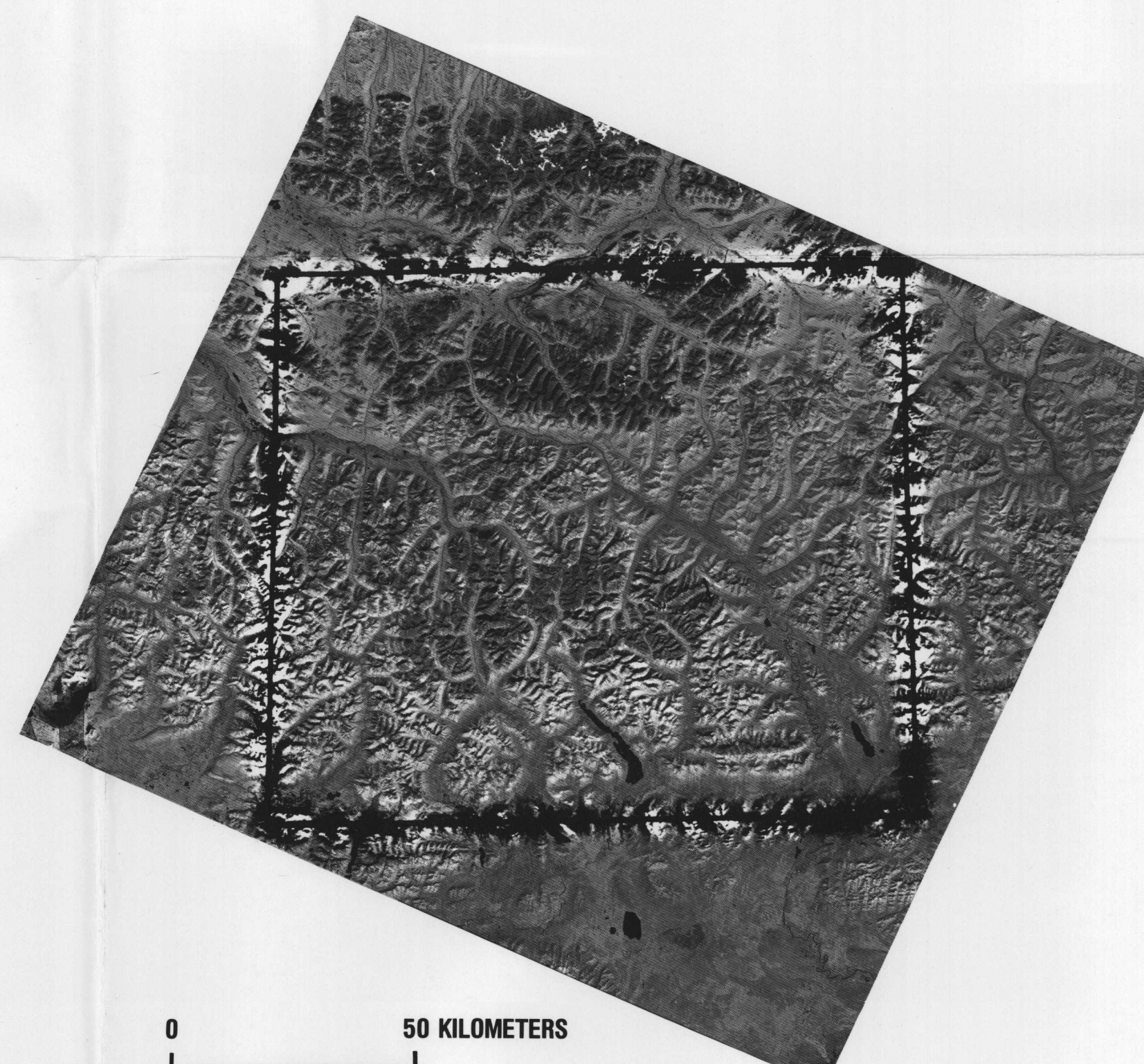


Figure 2. Example of Landsat imagery used in analyses of the Survey Pass quadrangle. Band 7. Black outline shows approximate quadrangle boundaries.

Figure 3. Map of area of mosaicked image segments depicted in figure 1 showing relative location of numerous lineament zones (intersections) and known exposures of granitic rocks in the Survey Pass quadrangle and parts of adjacent quadrangles. From Brosge and Reiser (1971), Mayfield and Tailleux (1978), and Nelson and Grubeck (1980).

MAPS SHOWING INTERPRETATION OF LANDSAT IMAGERY OF THE SURVEY PASS QUADRANGLE, BROOKS RANGE, ALASKA

By
James R. Le Compte
1981